



University of Nevada
Cooperative Extension

Know Nevada Insects

COMMON NAME:
MONARCH
BUTTERFLY

SCIENTIFIC NAME:
DANAUS PLEXIPPUS
LINNAEUS

FS-17-13

The monarch butterfly is one of the most iconic butterfly species in North America, and it can be found throughout Nevada in the summertime. This species is famous for its yearly migration. Unlike Eastern U.S. monarchs that migrate to central Mexico, our Nevada monarchs migrate hundreds of miles to the coast of California every winter, returning back north to breed on milkweed plants.

By Kevin Brels and Joy
Newton

**PEER
REVIEWED**

Description and Life Cycle

Adult monarchs are distinctive and large. The upper sides of the wings (seen with wings open) have large orange sections surrounded by black veins. The wings have white spots and are ringed in black. The underside of the wings (seen with wings closed) look somewhat similar, although lighter in color and appearing almost greenish when hanging in trees. The body is black with white spots. An adult male has two small, non-functional black glands on the upper side of the hind

wing (towards the abdomen) that appear as small raised dots; these are absent in females. Females often have darker black veins and may appear slightly darker overall. There are four or five generations of adults during the summer. Nonmigratory adults (in summer) may live a month. Migratory adults live through the winter, between October or November until April.

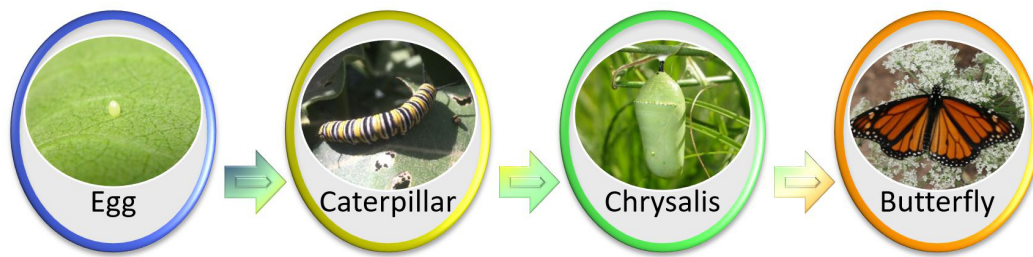
The monarch butterfly is mimicked by both the queen (*Danaus gilippus*) and viceroy (*Limenitis archippus*) butterflies. The queen butterfly, which only rarely strays into Nevada from farther south in the U.S., also eats milkweed as a caterpillar and is toxic (see caterpillar host plant section below). Both the monarch and viceroy are distasteful to birds. The viceroy is found mainly east of Nevada but occasionally strays west into northern parts of the state. This butterfly feeds on plants in the Salicaceae family (willows, poplars, etc.), and the caterpillars and adults are not toxic.

Eggs and Caterpillars

Adult females lay small but visible light-green eggs that hatch after four to five days. Eggs are usually laid singly on leaves, flowers or stems.

Caterpillars are brightly colored with alternating vertical black, yellow and white stripes. Larger instars (larval stages) have a set of black filaments at the front and back ends, with the front filaments longer than the back. Fully grown caterpillars reach almost 2 inches in length, after approximately 14-18 days. After reaching full size, caterpillars may “wander” off host plants before pupating.

A monarch caterpillar forms a silk pad and hangs in a “J” shape hidden under a surface for 12 hours before molting into a pupa. The pupa, known as a chrysalis in butterflies, is green with horizontal gold dots and a black line near the top, and a curved set of gold dots near the bottom. The pupa takes approximately 10 days to develop before emerging as an adult butterfly. As with all butterflies and moths, the wings take several hours to expand and dry, during which time the butterfly hangs and can be very easily damaged.



Egg and chrysalis photos by Mark Rainey.

Caterpillar and adult photos by Kevin Burls.

Adult feature photo by Master Gardener Becky Colwell.

Caterpillar Host Plants and Damage

Monarch caterpillars have fairly specialized diets, eating only plants in the milkweed genus *Asclepias*. There are five common native species of milkweeds in Nevada, with the most widely distributed being showy milkweed, *A. speciosa*. (A full guide and descriptions can be found in the *Guide to Common Milkweeds of Nevada* published by the Xerces Society.) Small caterpillars skeletonize leaves and flowers, while larger caterpillars devour entire leaves. Because milkweeds are long-lived spreading perennials, caterpillars do not seriously threaten the health of the plant.

All the plants produce a set of chemicals known as cardenolides, which the caterpillars sequester (store in their bodies), making them toxic to many vertebrate and invertebrate predators. The chemicals are also passed onto the pupa, adult and eggs, protecting all life stages of the insect.

In addition to these species of milkweed, monarchs also lay eggs on and eat tropical milkweed, *A. curassavica*, whose native range is south of the U.S.-Mexico border. This species of milkweed is not currently established in Nevada, though it is sold in southern states as an ornamental variety. **It is not recommended to plant this species in the United States because it might threaten monarch health (see threats section following).**



Milkweed | *Asclepias fascicularis*. Photo by Joy Newton.

Threats and Conservation

With evidence of serious, long-term declines in monarch populations during the past 20 years, many resources have been developed to help individuals conserve them. An international conservation plan was created by the Commission for Environmental Cooperation and is available through the Monarch Joint Venture (<http://www.monarchjointventure.org>). The Xerces Society created Project Milkweed (<http://www.xerces.org/milkweed>) to encourage planting and conservation of native milkweed species across the United States. In addition, the Monarch Joint Venture is a multi-agency partnership that helps coordinate conservation efforts. Finally,

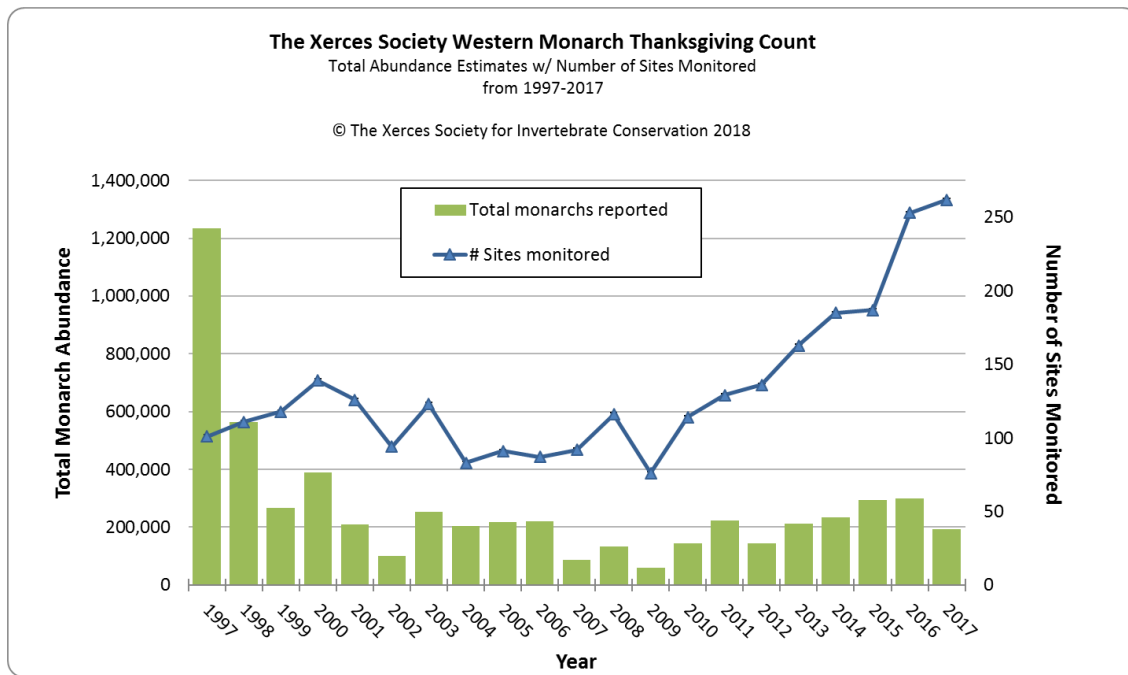
the federal government created the National Strategy to Promote the Health of Honey Bees and Other Pollinators, which includes a goal of increasing Eastern monarch population sizes and overwintering habitat.

The biggest threat to monarchs is habitat destruction, in their overwintering grounds and in summer breeding habitat throughout the United States. The spread of agricultural and urban land during the past 50-70 years steadily decreased the amount of wild habitat available for milkweed. In addition, milkweed plants are often found in disturbed habitats with access to water, such as agricultural field edges and roadsides. These areas may be frequently treated with herbicides that limit weed growth. Crops themselves are often modified to resist herbicides, and use of the herbicides is correlated with declines in summer and winter monarch population sizes, likely because of the drastic increase in herbicide use near herbicide-resistant crops (Pleasants and Oberhauser 2012). **The number one thing you can do to conserve monarchs is to plant and allow milkweed to grow in your area!**

Besides the loss of milkweed habitat, there are other major causes for concern for monarchs. Pesticides, or chemicals directed at invertebrate or vertebrate animals, are frequently used for agricultural purposes, and are often dangerous to monarchs. One class of pesticide called neonicotinoids is used on many seeds and seedling plants, including use by residential nurseries. These chemicals are found throughout all plant tissues such as leaves, pollen and nectar. Applications of neonicotinoids may drift into neighboring areas and persist in the soil, negatively impacting the monarchs visiting these flowers. Neonicotinoids are harmful to many arthropods, including monarchs, honey bees, and other beneficial pollinators and predators. Many of these chemicals have restricted uses and have been banned in Europe. Many pesticides, such as those used to control mosquito populations, are harmful to monarch caterpillars and adults, and their expanded use over the last 20-30 years has likely increased monarch exposure to these chemicals.

Finally, the use of tropical, nonnative milkweed plants in residential areas has potential to harm monarchs. Unlike native species, tropical milkweeds may retain their leaves throughout the winter, encouraging monarchs to lay eggs at the wrong time of year. In addition, the leaves may retain pathogens harmful to monarch caterpillars, whereas native species lose their leaves and reduce the chance of becoming a pathogen source. More information regarding appropriate native milkweeds for the Great Basin can be found in The Xerces Society's publication Great Basin Pollinator Plants: Native Milkweeds (*Asclepias* spp.).

(<http://www.xerces.org/wp-content/uploads/2011/03/NativeMilkweedsGreatBasin.pdf>).



Results from the 2017 Western Monarch Thanksgiving Count.

The data shown in this graph is available from the Xerces Society (<https://www.westernmonarchcount.org/data/>).

Resources

- Monarch Joint Venture. 2015. Monarch Joint Venture - Partnering to conserve the monarch butterfly migration (<http://www.monarchjointventure.org>). Accessed on 11/24/15.
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- Pollinator Health Task Force. 2015. National strategy to promote the health of honey bees and other pollinators (PDF). Accessed on 11/24/15.
- Xerces Society for Invertebrate Conservation. 2012. A guide to common milkweeds of Nevada (http://www.xerces.org/wp-content/uploads/2011/10/NV-milkweed-guide_XercesSoc2.pdf). Accessed on 11/24/15.

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- Xerces Society for Invertebrate Conservation. 2015. Project Milkweed (<http://www.xerces.org/milkweed>). Accessed on 11/24/15.

Special thanks to Marcia Moffitt for the graphic design and formatting of the print version of this publication, which is available upon request, to Mark Rainey for the photos of the egg and chrysalis and to Master Gardener Becky Colwell for the adult Monarch butterfly feature photo.

This work is supported by Crop Protection and Pest Management Extension Implementation Program C-REEMS Grant Proposal Number: 2017-04410 GRANT # 12398398 “Nevada Extension Implementation Program 2017” from the USDA National Institute of Food and Agriculture.

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